INDIVIDUALLY ADJUSTABLE SLEEPING EQUIPMENT

Melvin N. Jamapal, Los Angeles, Calif., assignor to Wortsos Corporation, Los Angeles, Calif., a corporation of California

Filed Apr. 28, 1966, Ser. No. 545,916
12 Claims. (Cl. 5—243)

ABSTRACT OF THE DISCLOSURE

This invention relates to prescription sleeping equipment and especially with a box-spring and mattress combination to be furnished according to prescription made according to firmness requirements fitting a certain individual who is to recline upon the same. Moreover, this invention is concerned with improvements in a prescription bedding unit of the type disclosed in my previously issued U.S. Letters Patent 3,126,554 of March 31, 1964 herein predetermined firmness can be applied to certain areas by adjustment to the individual spring units in the box spring.

This invention is concerned with bedding or the like and particularly with box spring used and provided with underlying support beneath a mattress upon which a person is to lie, and relates broadly to any furniture of this nature upon which a person is to sit or lie whether an overlying mattress is used or not.

A scientific approach has been made to control the posture of the human form in a reclining position upon the box spring, and it has been found that beneficial results can be obtained by using certain specified spring pressures at certain specified areas of the bedding. Because the stature of the human form is characterized by curvatures that vary from person to person and which also vary as a result of injuries and defects, it is not possible to design and build a single bed unit suitable for all. On the contrary, each individual person will require a certain prescribed springing if proper support is to be expected throughout the length of the box spring. Although various reclining positions are contemplated, for purpose of illustration a normal reclining position upon the back or posterior is to be considered. Obviously, the reclining body has protrusions and indentations, and it has portions heavier than others. Generally, these variations in stature occur longitudinally of the box spring.

Although variable tension at different areas is obtainable with the prior art and with the structure of my previous patent, there are shortcomings in said previous efforts which render them commercially unattractive. Generally speaking, the prior art does not contemplate the application of adjustment to individual rows of spring coils, and my previous patent structure presents structural complexities which are impractical from a commercial viewpoint when comparison is made to the present invention.

The characteristic features of such a box-spring is the height adjustment for the spring support and which involves selectively insertable blocks. In the use of such blocks for this purpose retention in working position is a primary requirement, and to this end my prior construction involves steps and shoulders and which results in complex blocks etc. and specially peculiar configurations. Needless to say, special and complex shapes are costly and therefore are commercially prohibitive. Further, the height limiting means as it is now disclosed is greatly improved and imposes certain requirements which are now integrated in the hardware which characterizes the instant disclosure. In other words, in addition to the problem of maintaining placement of the adjustment blocks there is the problem of installing the height limiting means, and it is a general object of this invention to provide a most practical unit of hardware combined in a box-spring of the type heretofore referred to that serves a multitude of purposes; that is, to guide both the spring support and height limiting means therefor, to maintain both the spring support and height limiting means within operating limits, to locate both spring adjustment blocks and height limiting depressed blocks in working positions, and to secure both said blocks in said working positions.

An object of this invention is to provide a most practical unit of hardware to be combined with both a spring support and height limiting means therefor and whereby specified and prescribed spring pressures and heights can be individually set. There are adjacent related areas that extend transversely of the bedding, and each of said areas will underlie a designated portion of the person's body which is to lie therefrom.

Another object of this invention is to provide a box-spring which presents a simulated spring supported bed wherein each row of springs supports an individual height limited bed-slat over which a pad or mattress is extended for cushioned support of a person's body.

It is still another object of this invention to provide a box-spring of the character referred to wherein both the spring pressures and height limiting means are established by dimensionally prescribed and simply formed block-shaped elements that are inserted into working position and held thereby the spring pressures that are set thereby. Further both the spring support and the bedboard slats are biased into working position, the slats being individually depressible upon the application of prescribed forces.

The various objects and features of this invention will be fully understood from the following detailed description of the typical preferred form and application thereof, throughout which description reference is made to the accompanying drawings, in which:

FIG. 1 is a perspective view of the box-spring and mattress combination, with a portion of the mattress broken away and thereby showing the features of the box-spring. FIGS. 2 and 3 are longitudinal and transverse sectional views taken as indicated by lines 2—2 and 3—3 on FIG. 1 respectively, each with a portion of the mattress broken away to expose the box-spring.

FIG. 4 is an enlarged perspective view of a portion of the structure showing the hardware which characterizes the present invention, and FIG. 5 is a fragmentary perspective view of a part of the structure shown in FIG. 4.

This invention has to do with sleeping equipment which is initially manufactured for general sales and in which the combination of elements is then accessible to be accurately completed by the insertion therein of prescription elements according to precise requirements. To these ends therefore the instant bedding is assembled, as a partially completed construction, being characterized by its permanent assembly without removable parts and in a form receptive to the prescription elements which are inserted according to precise observations and corresponding requirements so as to complete the said box-spring. Further, if a bedding unit characterized by a hard positionable and depressible underlaying surface, unique in that said surface is made up of independently operable transverse areas that are individually yielding.

In FIG. 1 of the drawings I have shown the combination of a box-spring X and an overlying mattress M. It is to be understood that the present invention is applicable to other like units of construction used to underlie padding for the support of a person, and the box-spring X may or may not be covered by a padding and/or ticking T which is indicated. As it is illustrated, the box-spring X involves, generally, a frame A, one or more sets of spring coils B, a support C for each set of spring
coils B, height limiting means D for the coils B, a position selection means E for setting the effectiveness of each set of spring coils B and a position selection means F for placement of the height limiting means D; and all of which underlies the mattress M.

The frame A is the supporting structure that carries the sets of spring coils B and it is of the desired shape as circumstances require. The sets of spring coils B can vary in number and arrangement and they are preferably in a series disposed transversely of the frame A. The support C and height limiting means D are cooperatively related to the sets of spring coils B, there being a complementary set of means C and D for each set of coils B.

The supporting frame A can be a simple rectangular structure having side rails 10, a foot rail 11, and a head rail 12. As shown, the rails 10, 11 and 12 are alike in that each is a flat elongate member disposed in a vertical plane and one right-angulaingly related to the other. Thus, the frame A is a four-cornered structure with parallel side rails 10, each rail having a bottom edge 15 and an upper edge 16.

The sets of spring coils B are usual in that they are in a straight alignment that extends between the side rails 10. However, the sets of spring coils B are later designed in spaced group relationship, as shown. As is preferred, there are two spaced groups of spring coils with two springs 17 in each group, each group being positioned at or near the ends of the springs supports C and means D that will be later described. The number of individual coils can vary, four coils being shown, and each is a helically wound spring 17 disposed on a vertical axis. The top and bottom ends 18 and 19 of the springs 17 are closed and are round and in a plane normal to the axes of the springs.

The spring support C extends transversely between the side rails 10 at the bottom edge 15 thereof. The support C is a straight board-like and substantially rigid member adapted to withstand the compressive forces of the combined springs 17 of the sets of spring coils B. As shown, the springs 17 are seated with their round bottom ends 19 received in arcuate channels 26 in the spring support. The spring support C is a flat-membered member narrower than the diameter of the spring ends, the said arcuate channels 26 being formed about a common center at 27. The top ends 18 of the springs 17 are received in a like manner in the body parts of the flat-membered member of the means D later described. The ends 18 and/or 19 are anchored as by fasteners driven into place with the heads thereof overlying the spring end.

The height limiting means D extends transversely between the side rails 10 at the top edge 16 thereof. The height limiting means D is a straight board-like and substantially rigid member adapted to withstand the compressive forces of the combined springs 17 of the set of spring coils B. As shown, the springs 17 are seated with and round their top ends 18 received in arcuate channels 36 in the flat-membered member which, like the spring support C is narrower than the diameter of the spring ends. In accordance with the invention the flat-membered member of the height limiting means are contoured as at 28 where such a configuration is dictated by requirement. It is contemplated that there will be natural body protrusions as well as artificial enlargements requiring local clearances, and these are accommodated for in the relief afforded by forming the suitable contours as at 28. Said contours at 28 are recessions in the normally straight and horizontal top planes of the individual flat-membered members.

With the construction thus far described it will be apparent that each area to be sprung is characterized by transversely disposed rows of springs 17 fastened between like flat-membered elements C and D. In the preferred form, the spring supports C and height limiting means D are essentially identical parts, being made of straight and stiff wooden pieces of the same cross sectional and length dimensions. As shown, the elements C and D are extended beyond the opposite and endmost springs of the series and terminate in normally disposed and flat ends 25 and 35 that move closely within the confines of the rails 10 and 11. Further, the height limiting means D is related to the frame so as to permit positioning thereof by the extension of the springs 17 to a predetermined height, normally at or coincidental with the top edges of the frame A. Therefore, in actual practice the row of spring coils B tends to extend the means C and D to positions above and below the top 16 and bottom 15 of the frame, respectively.

With the bedding structure thus far described there are adjacent related transverse areas in a series extending longitudinally of the frame A. As shown, the padding and/or mattress M overlaps all of these areas, and there is a set of spring coils B, or the like underlying and establishing each area to be tensioned to the desired firmness. Accordingly, I provide the means E to selectively position the spring supports C, and I provide the means F to selectively depress the height limiting means D, whereby each of said areas can be fixed both as to position and bias according to prescription.

The means E for the spring supports C is reduced to the simplest form and involves tensioning elements in the form of rectangular blocks 50 individually positioning the spring supports C. In carrying out the invention each side rail 10 is provided with a flange and the downward pressure exerted by the spring coils B is at the terminal end portions of the spring supports C into pressured engagement with said flanges with the block 50 of means E inserted therebetween so as to establish the desired height. The blocks 50 are alike, although each is of a prescribed height L. Generally, the blocks 50 are simple rectangular solid elements, or the equivalent, with a flat bottom 55 to seat on said flange and with a flat top 56 to engage and carry the spring supports C. Thus, by inserting blocks 50 of prescribed height L the firmness at predetermined areas can be accurately controlled to meet with the preciseness of a prescription, and it is a simple matter to remove and replace any block 50 with another block 50 of different specified height L. As shown, the blocks 50 have opposite sides 60 spaced the same distance as are the sides of the flat members that comprise the mean C and D.

The position selecting means F for placement of the height limiting means D is also reduced to the simplest form and involves depressor elements in the form of rectangular blocks 50' individually positioning the flat-membered mattress supporting members. The blocks 50' are like the blocks 50 hereinabove described, although dimensionally the prescribed height L' thereof will be individual. Generally, the blocks 50' are simple rectangular solid elements, or the equivalent, with a flat top 56' urged into pressured seating on the upper flange and with a flat bottom to bear against the flat-membered member of the height limiting means. Thus, by inserting the blocks 50' of prescribed height L' accurately controlled and predetermined depression of the individual flat-membered members can be accomplished to meet the preciseness of a prescription. It is then a simple matter to remove and replace any block 50' with another block 50' of different specified height L'.

In accordance with this invention I provide means H in the form of a unit of hardware that serves multi purposes as is hereinabove set forth. Specifically, the means H is a vertical guide means for both of the flat-membered elements of means C and D and limits their movements relative to each other and to the frame A, and the means H receives and holds the block 50 as well as the block 50' in working positions. As is shown, the means H is an open box-like member 70 that fastens to the frame A at the interior of the rail 10 to engageably receive the terminal end portions of the elements C and D. The said terminal end elements C and D are vertically spaced and also move vertically
relative to each other, in which case the member 70 is a vertically disposed member. In carrying out the invention, the box-like member 70 has a flat wall 71 that is secured flat against the inside of rail 10; it has a pair of spaced and parallel guide walls 72 normal to the first mentioned wall 71, and it has a pair of spaced and parallel stop walls 73 also normal to the first mentioned wall 71. The wall 71 is secured to the rail 10 by fasteners 74 as shown. The guide walls 72 are vertically disposed and spaced so as to permit free movement of the end portions of the elements C and D therebetween. And, the stop walls 73 are horizontally disposed, the upper stop wall limiting upward movement of the height limiting means D and the lower stop wall furnishing the said flange support for the block 50 in order for said block to carry the spring support C.

The box-like member 70 as it is above described is readily made of sheet metal, or it may be a molded part or otherwise formed into the rail 10, and a pair of openly opposed members 70 is employed to receive and limitedly guide the opposite portions of the two spaced elements C and D. Thus, the pair of opposed members 70 is installed in vertical alignment, after which the elements C and D are entered therein and initially captured in working position as by turning down of the upper stop wall 73 to the position shown. The upper stop wall 73 is in the plane of the upper edge 16.

In accordance with the invention, the block 50 of prescribed height is inserted between the spring support C and within the confines of the guide walls 72. Said block 50 is engaged flat against the wall 71 and so that its bottom 55 rests flat upon the lower stop wall 73. The block 50 of prescribed height is inserted between the height limiting means D and within the confines of the guide walls 72. Said block 50 is engaged flat against the wall 71 and so that its top 56 bears flat upon the upper stop wall 73. As is shown, there is an upstanding projection 75 at both the lower and upper stop wall 73 and each of which is sharpened so as to penetrate into the block 50, and block 50 respectively, thereby pinning the blocks in working position when they are forced into engagement upon the stop wall 73, by the spring pressure that is normally exerted. Thus, the top 56 of the block 50 is accurately positioned in order to support the spring support C, and the top of the slit-shaped member of the height limiting means D is accurately depressed, all as prescribed.

The box spring X hereinabove described is initially completed as set forth, with the plurality of transversely disposed spring coils B, spring supports C and limiting means D contained in assembled form by the means H. In said initially completed form the spring coils B urge the spring supports C into engagement with the lower stop wall 73 and subject to elevation therefrom by the insertion of the blocks 50 of prescribed height. Independently, the spring coils B urge the height limiting means D into engagement with the upper stop wall 73 and subject to depression therefore by the insertion of the blocks 50 of prescribed height. Independently prescribed compression is applied to each set of spring coils B and so that each transversely disposed area of the box-spring X can have a specified firmness. And, independently prescribed depression is applied to the height limiting means D if and when desired and so that each transversely disposed area occurs in the required plane of normal support.

In accordance with the invention the mattress M is combined with the box spring X to removably enclose and upholster in the same. To this end, the mattress M is unique by the design of a depending skirt 80 attached thereto by means of an underlying coupling panel 85. The skirt 80 is fashioned so as to encompass the frame A and its sections of ticking T that coextensively overlies the rails 10, 11 and 12. The lower marginal edge 81 of the skirt 80 coincides with the bottom 16 of the frame, along which edge the skirt is fastened to the frame A by means of a series of snaps 82 having detented engagement with mating buttons 83 mounted on the frame. The coupling panel 85 overlies and is engaged upon the slit-shaped members of the means D and is joined to the upper marginal edge 86 of the skirt 80 as by means of the snaps 84.

Carrying out the invention the panel 85 is joined to the bottom face 87 of the mattress M by a continuous ring of sewing 88 spaced inwardly and equidistantly from the outside edge of the mattress. Thus, when relating the mattress M to the panel 85 there is a deep inwardly extended fold into which the bedding covers can be projected, while the mattress M remains attached and in a centered position with respect to the box-spring X.

From the foregoing it will be seen that a commercially attractive box-spring and mattress is provided and wherein the inserted blocks 50 and 50' of prescribed height are properly located and held in working position. Each transversely disposed area overlying a set of spring coils B will have an accurately placed slit-shaped member biased to a specified firmness as precisely dictated by prescription, and as a result of installing sets of prescribed blocks 50 and 50' at opposite terminal ends of the spring supports C a very practical and serviceable box-spring is provided. Each transverse area of the overlying mattress M will then have its specified position and firmness of support, and if necessary both position and firmness can be altered by replacing said blocks with blocks of more suitable height, all without destroying or in any way altering the box-spring X as it is initially constructed. Access for completion and/or alteration of the box-spring and mattress combination is afforded by the removability of the mattress M from the box-spring X as it is made possible by the skirt 80 and coupling panel 85 without hindrance to the normal bed making procedures.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to myself any modifications or variations that may appear to those skilled in the art and fall within the scope of the following claims:

Having described my invention, I claim:

1. A box-spring for the support of mattress padding and comprising, a frame with side rails and a plurality of sets of independently effective spring coils with an adjustably positionable support therefor and with a height limiting means yieldingly carried thereby, each of said sets of spring coils comprising at least a pair of laterally spaced springs with their lower and upper terminals yieldingly against the said support and height limiting means respectively, and there being opposed members at the opposite side rails respectively and each of said members including a vertical guide means engageably receiving both said support and said height limiting means to align the same and direct the depression of the latter against said spring coils.

2. A box-spring as set forth in claim 1 wherein each of said members includes lower and upper stops at the guide means limiting the extensibility of the said support and said height limiting means.

3. A box-spring as set forth in claim 1 wherein the opposed members are inwardly opened box-shaped members with parallel side walls to form said guide means and vertically spaced end walls extended therebetweentheform said upper and lower stops.

4. A box-spring as set forth in claim 1 wherein the opposed members are inwardly opened box-shaped members with parallel side walls to form said guide means and vertically spaced end walls extended therebetweentheform said upper and lower stops.

5. A box-spring as set forth in claim 1 wherein the opposed members are inwardly opened box-shaped members with parallel side walls to form said guide means and vertically spaced end walls extended therebetweentheform said upper and lower stops.
vertically spaced end walls extended therebetween to form said upper and lower stops, and wherein there is at least one selective pair of blocks of prescribed height inserted into the said opposed members respectively and engaged with the upper stop thereof in order to depress the height limiting means against the set of spring coils as prescribed.

6. A box-spring for the support of a mattress padding and comprising, a frame with side rails and a plurality of sets of independently effective spring coils with an adjustably positionable support therefor and with a height limiting means yieldingly carried thereby, each of said sets of spring coils comprising at least a pair of laterally spaced springs with their lower and upper ends engaged yieldingly against the said support and height limiting means respectively, there being opposed inwardly opened box-shaped members at the opposite side rails respectively and each of said members including a vertical guide means formed by spaced parallel walls to shiftably receive both the said support and said height limiting means and having vertically spaced end walls extended therebetween to form lower and upper stops, and wherein there is at least one selective pair of blocks of prescribed height engaged with the stops of the opposed members respectively in order to position the said support and height limiting means at prescribed spring compressing height and depressed height respectively.

7. A box-spring as set forth in claim 6 wherein the said blocks are confined to a working position for carrying the said support by the confined engagement therewith between said spaced parallel walls that form the guide means.

8. A box-spring as set forth in claim 6 wherein said blocks are captured in a working position by an upstanding projection piercing the said blocks and thereby retaining them in said working position.

9. A box-spring as set forth in claim 6 wherein, the said blocks are positioned for carrying the said support and said height limiting means by the confined engagement therewith between said spaced parallel walls that form the guide means, and said blocks are captured in said working position by an upstanding projection extended from the spaced end walls forming the lower and upper stops to pierce the said blocks and thereby retaining the said in said working position.

10. A prescription box-spring and mattress for individual prescription adjustment, including a box-spring comprising, a frame with side rails and a plurality of sets of independently effective spring coils with an adjustably positionable support therefor and with a height limiting means yieldingly carried thereby, each of said sets of spring coils comprising at least a pair of laterally spaced springs with their lower and upper ends engaged yieldingly against the said support and height limiting means respectively, and there being guide means at the opposite side rails aligning the said support with and shiftably engaging the height limiting means for depression against said spring coils, and comprising a coextensive overlying mattress having a depending skirt encompassing the rails of the frame and attached thereto.

11. A prescription box-spring and mattress as set forth in claim 10 wherein, there are insertable blocks of prescribed height to be engaged at the side rails and selectively positioning the said support and height limiting means as prescribed, and said skirt is releasably attached to the side rails for accessibility to the box-spring by removal of the same, for adjustment thereto by insertion of said prescribed blocks.

12. A prescription box-spring and mattress as set forth in claim 10 wherein, the said skirt is joined to the mattress by means of a panel extended inward from the skirt and attached to the bottom face of the mattress spaced inward of the rails of the frame and thereby establishing deep folds for the tucking in of bed coverings.

References Cited

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Date</th>
<th>Inventor</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>65,964</td>
<td>6/1867</td>
<td>Thompson</td>
<td>5—243</td>
</tr>
<tr>
<td>131,034</td>
<td>9/1872</td>
<td>Spencer</td>
<td>5—239 X</td>
</tr>
<tr>
<td>3,059,249</td>
<td>10/1962</td>
<td>Kamp</td>
<td>5—246</td>
</tr>
<tr>
<td>3,126,554</td>
<td>3/1964</td>
<td>Janapol</td>
<td>5—243</td>
</tr>
<tr>
<td>3,252,170</td>
<td>5/1966</td>
<td>Frye</td>
<td>5—248</td>
</tr>
</tbody>
</table>

DAVID J. WILLIAMOWSKY, Primary Examiner.
R. D. KRAUS, Assistant Examiner.